Unit 16

Western Pacific Invertebrate Fisheries

Introduction

Important invertebrate fisheries in the Western Pacific include spiny and slipper lobsters and the gold, bamboo, and pink corals. The fisheries are relatively recent and range from the Hawaiian Islands EEZ to Guam, America Samoa, and various U.S. Pacific Islands.

The Northwestern Hawaiian Islands (NWHI) lobster fishery began in 1977, and an FMP was implemented in 1983. The FMP defines a minimum legal size for harvested lobsters, requires the use of escape vents on traps, forbids the retention of ovigerous females, and requires vessel operators to submit logbooks of daily catch and fishing effort.

The NWHI are uninhabited, and there is no recreational fishery—all harvests are commercial. Commercial lobster vessels carry about 800-1,000 traps which are used on 1-2 month fishing trips. The fishery targets spiny lobsters, which are marketed mostly as frozen tails. The fishery is managed by the Western Pacific FMC.

A short lived (1974-79) fishery for several gold, bamboo and pink corals existed off Makapu'u Point, Oahu, Hawaii. Since then, the prohibitive cost of fishing such difficult-to-harvest deep-water corals has stifled U.S. exploitation. With the exception of one aborted attempt at Hancock Seamount in the Hawaiian EEZ in 1988, legal domestic harvesting of precious corals within the EEZ has been non-existent for 14 years. There are no recreational coral fisheries. Precious corals within the EEZ are managed under the Precious Coral FMP, implemented in 1983 by the Western Pacific FMC.

Species and Status

Lobster

Spiny and slipper lobsters are fished in the western Pacific, primarily in the NWHI area. The NWHI lobster landings and CPUE peaked in the mid-1980s, then gradually declined during the years 1985 through 1990 (Fig. 16-1). The substantial decrease in both landings and CPUE after 1989 raised concerns that fishing effort was excessive for the existing lobster population. Low lobster CPUE continued into the early part of 1991, prompting an emergency closure of the fishery from May through November of 1991. In response to the substantial decline in CPUE, the FMP was amended in 1992 to limit entry into the fishery, establish an annual 6-month (January-June) closed season to protect spawning biomass, and set an annual catch quota. The quota is set at a level that provides harvesters an economically viable CPUE while protecting spawning biomass from over-harvest. The quota allows surplus production to be harvested if the population size (in terms of CPUE) is sufficiently large. The 1993 preseason forecast of lobster abundance indicated that the

Main Hawaiian Islands (MHI) and Northwestern Hawaiian Islands (NWHI)

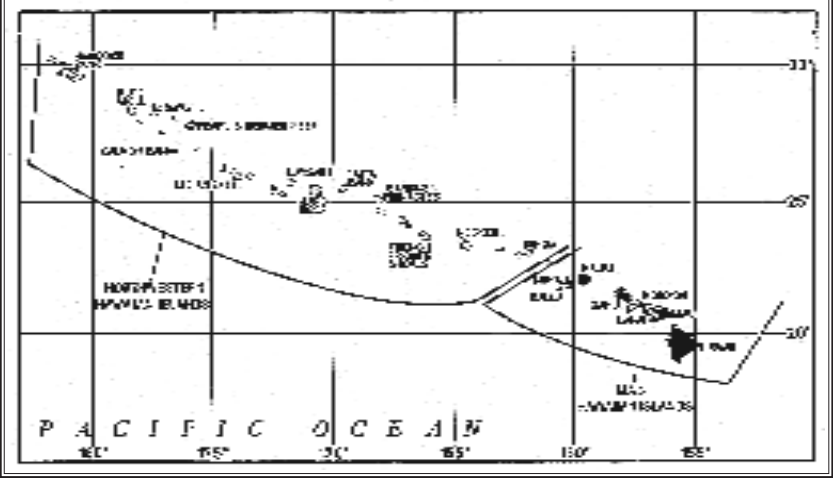

Table 16-1. Western Pacific Invertebrates

Productivity in metric tons and status of fisheries resources

Species	Recent Average Yield (RAY)	Current Potential Yield (CPY)	Long-Term Potential Yield (LTPY)	Fishery Utilization Level	Stock Level Relative to LTPY
Spiny and Slipper Lobster	143	106	135	Over	Below
Total	143	106	135		

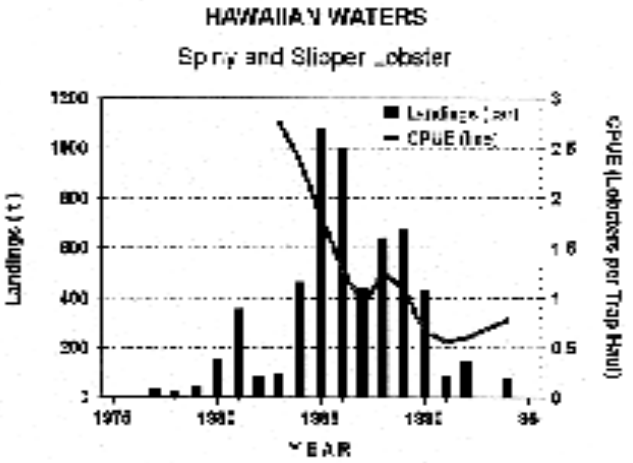

Fig. 16-1. Spiny and slipper lobster landings and CPUE.

lobster stock was too small to support a viable commercial fishery in 1993, so the fishery was closed. In 1994, the preseason forecast of lobster abundance indicated the population was rebuilding sufficiently to allow a fishery in 1994. The fishery was therefore opened July 1, 1994, but was closed in mid-August because CPUE monitoring during July and early August indicated that the population was smaller than predicted.

Hawaiian Spiny & Slipper Lobster Landings (t)

1992	144
1994	72

Recent research suggests that the decline in CPUE after 1989 was caused by changes in meso-scale oceanographic processes in the NWHI that reduced annual lobster recruitment, and that recruitment may remain at this lower level for several years. CPUE data from the commercial fishery indicate a general rebuilding trend in the stock since 1991 (Fig. 16-1); the stock is recovering to levels that will produce the economically optimum CPUE as defined under the FMP. The stock size is slightly below the level that would produce LTPY under the current level of recruitment (Table 16-1).

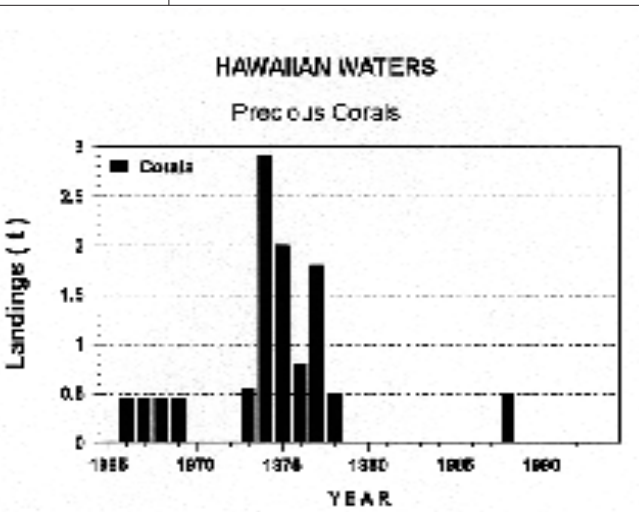

Fig. 16-2. Landings of precious corals from Hawaiian waters.

Coral

Fishing for coral is by regular or "experimental" fishing permit only. The FMP regulates precious coral fisheries within the EEZ management unit seaward of the MHI and NWHI, Guam, American Samoa, and the U.S. Pacific island possessions of Johnston Atoll, Kingman Reef, and Palmyra, Wake, Jarvis, Howland, and Baker Islands. Historical landings of precious corals are shown in Fig. 16-2.

Issues and Progress

Recent research suggests that ecosystem productivity in the NWHI is correlated with meso-scale oceanographic processes which may fluctuate on a decadal scale. The reduced level of lobster recruitment since 1989 is consistent with observed declines in seabird, monk seal, and reef fish populations in the NWHI. If the recent reduction of lobster spawning biomass is primarily due to changes in productivity and lobster recruitment, lobster LTPY is now lower than the LTPY level of the 1983-1989 period.

The lobster population model used to monitor population changes, forecast abundance and set harvest quotas involves critical assumptions about recruitment. To improve the accuracy of forecasts, the Honolulu Laboratory is studying the relationships among juvenile abundance, adult abundance, and recruitment. Research objectives include finding ways to monitor recruitment and detect changes in recruitment due to environmental shifts and other factors. Studies are also planned to determine the mortality of sub-legal sized lobsters discarded by the fishery, and to develop an improved quota procedure that provides greater year-to-year quota stability and dependability while minimizing the risk of overfishing. ❑